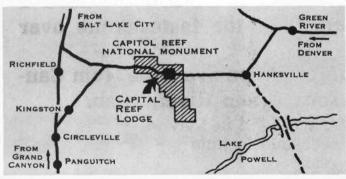


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A Peek in the Publisher's Poke

As 1970 draws to a close it is an appropriate time to reflect on the accomplishments of the past year and set new goals for the new year. The past year has seen more color added to the magazine and we were able to add additional pages on several issues. Advertising also increased which, combined with the loyal support of our subscribers, has made the color and extra pages possible. We wish to express our thanks to everyone and wish each and every one of you a most Happy New Year!

With the new year we will help the readers to discover the wonders of Lake Powell, Northern Arizona, Southern Arizona, Southern Utah, Canyonlands, Capitol Reef National Park, and the Colorado River basin in addition to our usual format.

Next month DESERT will feature the California desert which is the center of a much-publicized controversy over land use by recreational vehicles. Gracing our pages for the first time in a long spell will be John Hilton, renowned desert painter and one of the early contributors to the magazine, as he tells the story of how he painted the truest of all deserts—the moon!

Touching once more on advertising: many like to use a coupon in their ad, but most of you save your magazines for reference and hesitate to use these coupons. In any correspondence with an advertiser please mention Desert Magazine and include any key or department numbers which appear in these coupons. In this way the continued support of the advertisers will be assured.

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Volume 34, Number 1

JANUARY, 1971

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EDITORIAL, CIRCULATION AND ADVERTISING OFFICES: 74-109 Larrea St., Palm Desert, California 92260. Telephone Area Code 714 346-8144. Listed in Standard Rate and Data. SUBSCRIPTION RATES: United States, Canada and Mexico; 1 year, \$5.00; 2 years, \$9.50; 3 years \$13.00. Other foreign subscribers add \$1.00 U.S. currency for each year. See Subscription Order Form in this issue. Allow five weeks for change of address and send both new and old addresses with zip codes. DESERT Magazine is published monthly. Second class postage paid at Palm Desert, California and at additional mailing offices under Act of March 3, 1879. Contents copyrighted 1970 by DESERT Magazine and permission to reproduce any or all contents must be secured in writing. Unsolicited manuscripts and photographs WILL NOT BE RETURNED unless accompanied by a self-addressed and stamped envelope.

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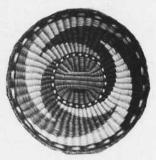
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GHOST TOWNS OF ARIZONA

By James E. and Barbara Sherman Maps by Don Percious

When gold was discovered in California a stampede of Argonauts started in 1849 with the herd of gold-seekers heading pell-mell for the Mother Lode Country. Blinded by the tales of the California bonanza, the thousands of prospectors who crossed Arizona tramped over millions of dollars in gold and silver.

Not until the Gadsden Purchase was completed in 1853, giving the United States the portion of Arizona south of the Gila River, did this heretofore land of little distinction begin to disclose her mineral resources to the eager fortune hunter.

As mining in the Mother Lode became a matter of big business, the individual prospector sought new fields—and found them in Arizona. For several decades it seemed that rich veins of gold and silver were discovered every month — and around every bend — in what was later to be called the Grand Canyon State.

Hundreds of mining camps sprung up near the mining sites and lasted as long as the gold and silver.

The authors of Ghost Towns of Arizona have selected 130 of these "ghost

towns" to include in their excellent book which is beautifully illustrated and includes thirteen maps giving the township, range and section co-ordinates, thus enabling the serious ghost town explorer to locate the towns on standard base maps.

Each of the towns are presented as a separate entity with a precede giving location, date post office was founded and date discontinued. The well-written text of each community is illustrated by historical photographs. The towns appear in alphabetical order. Any ghost town buff or anyone interested in the history of Arizona should have this ghost town bonanza. This reviewer hopes the authors will do one on California. Large 9 x 11 format, heavy paperback, 208 pages, \$3.95.

RHYOLITE GREENWATER

by Harold Weight

Two excellent books by Harold Weight on ghost towns in the Death Valley area have been enlarged and revised. They are Greenwater, Death Valley's "Greatest Copper Camp on Earth", and Rhyolite, Death Valley's Ghost City of Golden Dreams.

In *Greenwater* he describes the stampede in 1906 and 1907 to the east slopes of the Black Mountains which depopulated Goldfield and Tonopah and brought adventurers from all over the world. Called "the monumental swindle of the century" the boom lasted only a short time but in four months more than \$30,000,000 was invested.

In Rhyolite he tells the stories of Shorty Harris and Ernest Cross; of Bob Montgomery whose mine was the city's mainstay; of M. M. Beatty who was there before gold was discovered; the most famous resident, Senator William Stewart, and the men, women and children who created the famous Nevada town whose ruins today are silent testimony to their past. Both books are illustrated with historic photographs, paperback, \$1.00 each.



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Cachie's Last Secret by Choral Pepper



Is Cachie's gold bonanza still hidden in Arizona's rugged Harquahala Mountains?

THE YAVAPAI Indians of a century ago had fixed opinions about the role of the female in their society, an attitude somewhat different than is currently in vogue today. The Yavapai woman was a beast of burden. She did all of the work, raised the family and babied the braves. Any woman who rebelled or could not fit the role, was an outcast.

Such an outcast was Cachie, even though she was the daughter of a chief, trilingual and well-educated.

Her social disgrace came from the fact she had a deformed foot. She apparently had a personality conflict as well, because no one would believe her even when she tried to give away millions of dollars worth of Yavapai gold to various white settlers who had befriended her.

As a result of an exchange program to promote integration among Indian tribes, sponsored by a government befuddled with Indian problems, Cachie's father, the popular and powerful head chief of the Yavapai Indians named Quashackamo, permitted Cachie to be sent to live on a reservation with the Chemehuevi Indians in San Bernardino. There she learned to speak English and Spanish. Upon her return to Arizona Territory and her own tribe on the Colorado River, her father engaged her as his interpreter when he met with white Spanish and English speaking friends.

Among these friends of the great Indian chief was a local miner named Charles Genung, who had shown his sympathy for the Yavapais by giving them work at a time when ranchers in People's Valley were so enraged over Indian depredations committed by other tribes they wouldn't hire any Indian, even a peaceful and friendly Yavapai.

To relieve the situation, General George Crook was trying to get the Yavapais to agree to move to Camp Date Creek, near Wickenburg, where they would be given government protection. Quashackamo trusted Genung, but he wasn't yet sure of General Crook's good faith, so he came to Genung's camp in People's Valley to seek his white friend's opinion.

Although Cachie was ill at the time and feeling such pain in her twisted foot that she could hardly walk, she insisted upon accompanying her father because Genung spoke Spanish and if any of Crook's soldiers happened to be at his camp, this was a language few of them understood.

After the conference was over, Genung felt great admiration for the little girl and invited her to stay while she was ill, rather than return to the Indian camp several miles distant. Under his care, she recovered quickly and remained with him to assume the camp's domestic chores. Quashackamo came often to see his daughter. During one of these visits, the two Indians disappeared for three days. After Cachie had returned, she sought out Genung when he was alone. He had been good to her, she told him, and she wished to send him to a place where he could find so much gold it would make him the most powerful white man in People's Valley.

Genung asked a good many questions before he concluded that she had mistaken copper pyrites for gold, as the area she described was one in which he knew many copper pyrites lay on the surface of the ground. When he explained this to Cachie, he was not certain whether or not she understood him, but she never again mentioned the gold.

Two decades later, Genung regretted that he had underestimated the Indian's ability to distinguish gold. The lode she had tried to lead him to in the Harquahala Mountains started a gold rush that was unprecedented in Arizona history. The property produced \$15,000,000 before it was sold to an English syndicate for \$5,000,000. Its Bonanza and Golden Eagle veins alone produced almost \$3,000,000 in gold.

After a year, Cachie returned to her

own people. Compared with the respect and consideration she had been shown by the Genungs, the tauntings of her own tribe humiliated her beyond endurance. Again her health suffered and, again, her life was spared because of the care she received from a white friend. This time it was a Mexican woman named Maria Valencia who took Cachie to live with her in La Paz, a mining town then on the Colorado River. After Cachie had recovered, she remained with Mrs. Valencia to help with chores and often she tended the children of a neighboring family, the Oachas.

One day, after expressing her gratitude to Mrs. Valencia, Cachie urged the woman to follow her to a secret place rich with gold. Mrs. Valencia was an extremely heavy woman and unable to travel into the rugged Harquahalas, but her husband agreed to go. Cachie managed to make her way up the steep northern slope of the jagged mountain by following animal trails. She led Valencia right to the spot where the Harquahala mine later was claimed. Float full of coarse gold lay all over the surface of the ground, but it was different looking rock from that which Valencia was accustomed to seeing associated with gold in the Colorado River mines, so he ignored it. Cachie, too timid around men to labor the point, was frustrated for the second time in trying to reward a white friend.

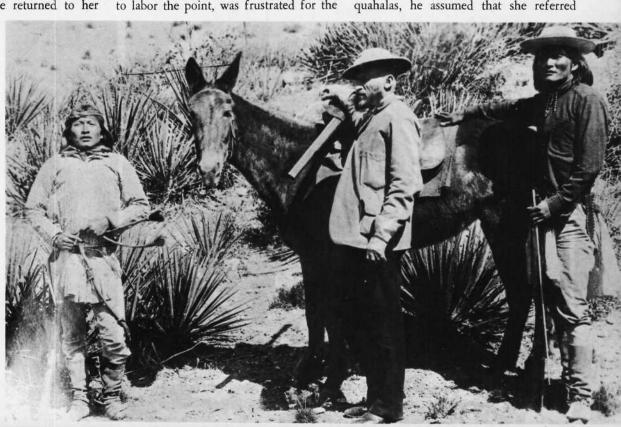
She then led him to a tank of water about a mile away, where they made camp. Had he been a prospector, he would have found a mine even there, as the place to this day is called Cachie's Tank and the mine became the fabulous Golden Eagle vein of the Harquahalas.

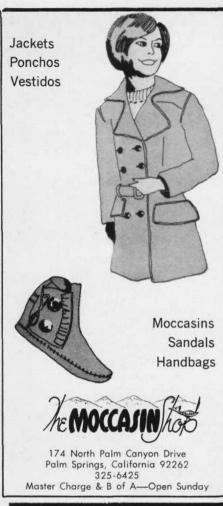
In spite of her chronically poor health, Cachie lived into her forties. It was at this time she made one last attempt to repay the kindnesses shown her by white friends.

Pete Oacha, one of the children of the Valencia's neighbors whom she had tended when he was a child, now was in his late teens and drove a freight wagon route between Ehrenburg and Prescott. Cachie had moved back to People's Valley where she lived in an abandoned miner's shack and did domestic work for the local ranchers. When Pete drove his freight through the area, he often stopped to give her Mexican herbs sent by his mother, which Cachie believed cured her ills.

During one of these stops, Cachie followed him out to his wagon and told him she would take him to a place where there was much gold, if he would delay his departure. Pete asked where they would have to go. When she indicated the Harquahalas, he assumed that she referred

Historic
photograph shows
General George
Crook and two
Indian scouts at the
time Crook was
fighting the
Apaches and
when Cachie was
befriended by
Charles Genung.





to the place she had earlier taken Valencia and he told her that there were great mines there now and all of it was claimed.

But Cachie was aware of this. The place she wanted to take him to was not on the north side where she had taken the others; it was on the south slope where no mines had yet been located. She then went on to explain that her father had taken her there when he was alive and had told her to reveal this place to no one, but to save it until she had a child of her own. Now Cachie was old and sick. She was childless and alone. Pete had been good to her and had brought her medicine. She would adopt him as a child of the spirit, as was sometimes a custom with her people.

Pete looked at the shriveled old squaw with her twisted limb and felt only pity. It was hard for him to imagine that she was the daughter of a once-great chief and had ever been hard enough to explore the sheer Harquahala. However, the stories of her efforts to lead earlier friends to a bonanza in gold were now legend, so he promised to return in two weeks with supplies and a buckboard so

they could make the trip more comfortably for her.

That was the last time Pete saw Cachie alive. When he returned two weeks later, it was too late.

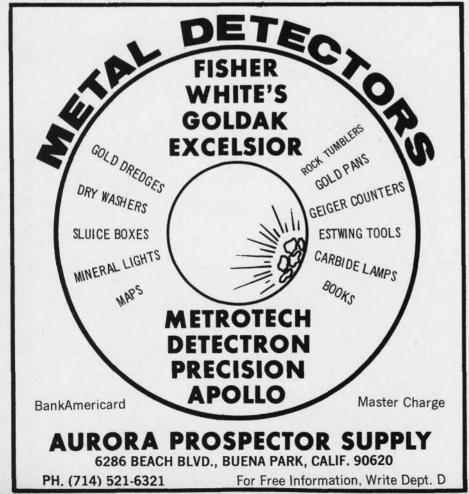
At first Pete confided Cachie's secret to only his mother and his elder brother, but after several years of fruitless searching, they engaged the help of friends who were experienced prospectors. Still they met with no success. Cachie had given Pete an impression that there was something unusual about the appearance of the gold and this was borne out when he picked up some rusty quartz with gold from arroyos in the foothills on the southern slope of the Harquahalas, but he was never able to trace it to a source. Forty years later, Pete, like Cachie, was dead. Now, three generations later, his grandson is looking for it.

Other reports have told of an "odd looking, rusty gold in quartz" found in washes in the area, but probably the most likely evidence of gold appeared in a story in the Yuma Sentinel in 1892. It concerned two Frenchmen who, some 20 years earlier, had unloaded a large amount of rough gold from their pack mules in Yuma, purchased supplies at the Hooper Company general store and deposited the remaining \$8000 worth of gold to their credit. The rough gold had been hammered from a rusty looking quartz, bits of which still clung to the larger pieces of ore.

After spending a few nights celebrating in local saloons, the Frenchmen then headed back into the desert toward Agua Caliente, east of Yuma. Some barroom acquaintances tried to follow them, but after their first night's camp at Agua Caliente, the Frenchmen turned northward and eluded the pursuers. The southern slope of the Harquahalas lies directly north of Agua Caliente.

Although the Frenchmen were never heard of nor seen again, their deposit of gold remained at the Yuma store until it changed hands 20 years later.

Another account of "rusty gold quartz" was reported by old-timer George Sears, an Ajo mine owner, who picked up about 25 pounds of it from a prospect hole in order to balance the pack on his jack. He had detoured into what he thought were the Eagle Tail Mountains to do a little prospecting en route from Ajo to Phoenix, but a flash storm on the desert had



caused him to seek refuge in his bedroll on the side of a wash instead. The following morning he gave up the idea and returned to Ajo. When he unpacked his jack, he found that the rusty looking rocks contained gold. He was never able to return to the spot. The Eagle Tails are adjacent to the southern slope of the Harquahalas. The gold Sears found matched that on deposit in the Yuma store.

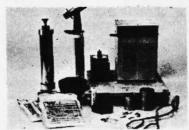
Today, the Harquahalas are as empty of population as they were in the days when Cachie was trying to send her friends there to discover the gold. The booming town that arose in 1889 with the mines is a ghostly accumulation of old foundations, crumbling fireplaces and fragments of broken glass turned purple in the sun. Its postoffice, established in 1891, was discontinued in 1918, then revived from 1927 to 1932 under the name of Harqua. Since then the town has been abandoned.

Closer to the southern slope of the Harquahalas is another ghost town, Harrisburg. This town was a contemporary of Harquahala, but arose because of water in the region, not gold. Its postoffice was founded in 1887 and discontinued in 1906. Harrisburg lies five miles southeast of US 60-70 and one-half mile off of the long straight road from Salome to Buckeye. Only an old cemetery and a few broken foundations are evident.

Another local, unpaved road runs south from US 60-70 two miles west of Aguila and jogs around the southern end of Harquahala Peak before it meets with the Salome-Buckeye road on the Harquahala Plain. There are few trails in this empty desert country, so anyone searching for Cachie's secret will find that rugged back country equipment and plenty of water is a necessity.

It is unfortunate that Cachie's old friends didn't profit by her secret, but perhaps someone of this century who has been kind to the underprivileged will be the recipient of her gratitude. Pete Oacha's grandson refuses to reveal his ideas as to its location and Cachie's last secret has never before been published, but family friends of the Oachas know the story well. When Tom Oacha packs a metal detector and heads out toward the desert on long weekends, his exact destination may be a secret, but his motive is loud and clear.

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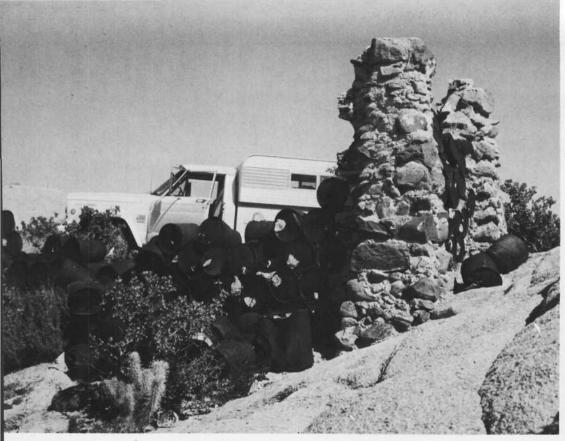
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Empty explosive cans were used in the walls of this house at the upper camp.

THE ROAD suddenly ended and we found ourselves in the foothills of the Coyote Mountains in the southeastern part of Southern California's San Diego County. On a flat area at the foot of a large hill was a ghost town—an old railroad camp which had been established about 60 years ago when a railroad line was built between San Diego and El Centro in the Imperial Valley.

This was not a ghost town like most others in the West which had been the homes of cowboys, miners and outlaws, yet it had undoubtedly been as rough a town as any of them. The project with which it was connected was worth \$18,000,000—the construction of the railroad—but its true value was much higher, for the line formed a vital link in the transcontinental route between the Pacific and points east.

To reach the camp, we started out at the little town of Ocotillo in Imperial Valley and drove for four miles along the old Imperial Highway, now called S-2, in the direction of Warner Hot Spring. Then we turned off on a county road toward the Coyote Mountains and continued on about seven miles to a point where the road crosses the railroad tracks.

Had we continued on across the tracks, we would have passed an old miner's cabin and would eventually have reached Dos Cabezas-Springs at the foot of two large crags which give the spring its name. Instead, we turned north and drove along the tracks, also on a county road. We passed the old Dos Cabezas railroad station, now completely in ruins, and then for another two or three miles continued along the road until we found a place where we could cross the railroad tracks.

The going was rough as the road was not maintained. We skirted a hill known for the many Indian pictographs which can be found in caves on its slopes and then, after two or three miles came to the upper part of the old camp.

The walls of only one house are standing today. The men who lived in it had used empty cans of explosives to reinforce the walls which were made of rock and cement. There were several dugouts in the camp, probably built by some laborers who sought to shelter themselves from the heat. Near the walls of the house stands an unusual wooden structure, a frame which might have been used in the olden days to accommodate a hoist to load and unload heavy equipment.

The lower part of the camp is hidden in the narrow passages and ravines of the hills. It is possible to drive to this part of the camp with a four-wheel-drive vehicle along a foot path which is often blocked by boulders. A short distance away, the land drops sharply toward the



Ruins of what may have been a mess hall (above) and storage room at the lower camp.

Railroad in



by Peter Odens

bottom of a gorge. The railroad tracks emerge from a tunnel on the slope, only to lose themselves in another tunnel a short distance away.

A couple of hundred yards from the tunnel we found the foundations of a large structure which may have been a mess hall. A small storage room was attached to it. In another nook of the ravine we saw the remnants of what must have been a blacksmith shop. It would seem that large vehicles brought the needed supplies and equipment to the upper camp where it was transferred to smaller vehicles which could negotiate

the tortuous path to the lower camp close to where the tracks were being laid and the tunnel built.

Construction of the railroad began in 1907. It was to be a 148-mile line of which 44 miles ran inside Mexico under a special concession granted by the Mexican government.

Twenty-one tunnels were needed to provide a safe passage for the railroad. In the 11-mile stretch of the Carrizo Gorge, one of the scenic wonders of the west, 17 tunnels alone were needed. This part of the line cost four million dollars of the total of eighteen million dollars.

continued



Old station at Jacumba Hot Springs is no longer in active use.



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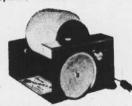
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The daring enterprise was financed by J. D. and A. B. Spreckels of San Diego and the Southern Pacific Railroad, Work was done by contractors who in turn sublet work on short stretches to smaller outfits, mostly owned by Swedes and Greeks. Labor force included Chinese, Mexicans, Indians, Greeks and Hindus. The camp we were visiting was said to have been occupied by Chinese.

Construction men had to blast through solid rock along the ragged edge of the mountains. Some of the tracks leading through the Carrizo Gorge are perched about 900 feet above the floor of the gorge and the longest tunnel is 2650 feet long.

The road led across the Tecate Divide at Hipass, 3657 feet above sea level. A trestle across Campo Creek is 175 feet high and 580 feet long, one of the world's highest bridges of its type. Its construction cost was \$180,000.

Many difficulties hampered the smooth completion of the project. High wind velocity and height made it very hard to build the Campo Creek viaduct. A rock slide at one of the tunnels wiped out the tracks completely and the tunnel was replaced by a 185-foot high wood trestle.

The line finally was completed, and on November 15, 1919, John D. Spreckels drove the gold-plated spike that announced to the world the line was ready. Trains left San Diego and El Centro daily at night on a trip which took about six and a half hours to the other end of the line. On the way, the two trains would meet in the vicinity of Hipass in the Laguna Mountains. Stations scheduled en route were Seeley, Dixieland, Coyote Wells, Jacumba Hot Springs, Campo, Tecate, Tia Juana, Chula Vista and National City.

Regular fare for passengers was \$6 one

way, or \$5 if the passenger had no baggage with him. At El Centro, passengers could catch other eastbound trains-the connection had been completed. The line served for both passenger and freight service for many years.

On February 1, 1933, the properties and operations of the San Diego and Arizona were transferred to a new operation, known as the San Diego and Arizona Eastern, the capital stock of which is solely owned by the Southern Pacific. Today, the line is used exclusively for freight service.

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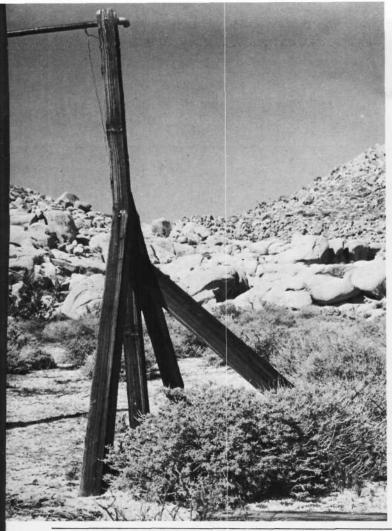


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This frame structure was probably used as a hoist to unload heavy equipment at the upper camp of the San Diego and Arizona Railroad.

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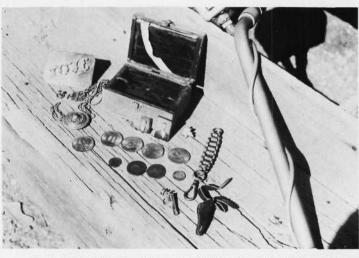
GOLD COINS FOUND

This picture was taken by a treasure hunter. This past summer he and his family spent a few days of their vacation treasure hunting in a ghost town. With the aid of his Garrett Hunter detector, he found this old and valuable jewelry box. It contained five \$20 gold coins, four other rare coins, several pieces of jewelry and two old tin-type pictures. The value of the gold coins alone more than paid the cost of his entire vacation!

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The author's father at his partially completed arrastre, built in 1948 at Big Oak Flat, California. Indians were using arrastres when Spanish arrived.

THE ARRASTRE, sometimes spelled arrastra, is the oldest, most primitive and least expensive machine for the mechanical grinding and amalgamating of free-milling ore. The ore, when broken and crushed, releases its metal particles which are then attracted and held by mercury to form an amalgam. As gold and mercury are heavier than crushed rock, they go to the bottom and remain there until recovered.

The origin of the arrastre dates back to a period prior to the Spanish conquest. The conquistadores found this operation already in use by the Indians of Pachuca, Mexico during the early part of the 16th century.

Crude in construction, but simple to operate, it was one of the most effective early methods of recovering gold and silver from native ore. It was cheap, easy and convenient because it could be made on the spot from materials at hand, such as flat stones, clay, rough logs and rawhide.

The Mexican arrastre was a simple machine by means of which heavy boulders were dragged over ore confined in a

ANCIENT !

circular rock-paved basin. To arms extending from a center post, made from rough logs, were harnessed the dragrocks and the power: one horse or one mule.

While the use of the arrastre was known to the '49ers, it did not come into popular use by American miners until placer gold became so scarce that simple panning, the use of rockers, sluice boxes, etc., were no longer profitable. Hard rock mining became a necessity.

Later on, the crude original Mexican arrastre was improved on by American miners with the availability of more sophisticated materials such as cement and steel, but the principle was the same.

In the period of its more extensive

use, the arrastre consisted of a simple basin, usually about 14 feet in diameter, made of cemented flat stones with shallow grooves between them. The sides were about two feet high. In the center of the stone basin a hole was drilled and in that hole a vertical axle was firmly cemented. To this axle was attached the rotating drag-beam which extended several feet beyond the rim at one end and to the edge of the basin on the other. To these arms, inside the basin, were chained one to four drag-rocks, each weighing about three hundred pounds. These were drawn around the basin.

They were arranged so that their heads were suspended slightly in order to drag easily over the ore while at the same



Photograph shows arm of arrastre which pulled heavy granite stones around by chain to break up ore. Slabs at left were once floor of arrastre.

RRASTRES

time the full weight of the tail-ends weighed heavily upon the ore and ground it to a very fine consistency.

Eventually, the animal power gave way to steam and finally gasoline engines, with such innovations as pulley shafts and crown-gears. Some of the early miners wed Indian women and many a hefty squaw was harnessed to the arrastre when animals were not available.

The ore was first broken or crushed to the size of a large walnut. About 200 pounds of it and a small amount of water were distributed over the bottom of the basin while the machine was in motion. When the ore had been reduced to the size of a pea, another 200 pounds could be added and the whole ground to a pulpy mass. About four or five hours were generally required for complete reduction.

Mercury was then scattered over the surface of the basin in the ratio of one and one-quarter ounce to each ounce of gold in the ore. This was determined by personal analysis or assay. The grinding would continue for another two hours so that all the gold would come in contact with the mercury and amalgamate.

An excess of water was added gradually with the grinding reduced to a slower speed so the amalgam could settle to the bottom and the pulp was then drawn off through the drain channel. The entire process could be repeated several times using the same amalgam. Most of

by Palmer C. Ashley

the mercury would be recovered by retorting and the residue easily shipped for reimbursement.

During the 1860s, forty such arrastres were built along the Hassayampa River in Arizona to mill the ore from the famous Vulture Mine near Wickenburg. Some say the Lost Dutchman Mine in the Superstition Mountains, supposedly found by Jacob Waltz, was a cover-up for the high-grading by his partner employed at the Vulture.

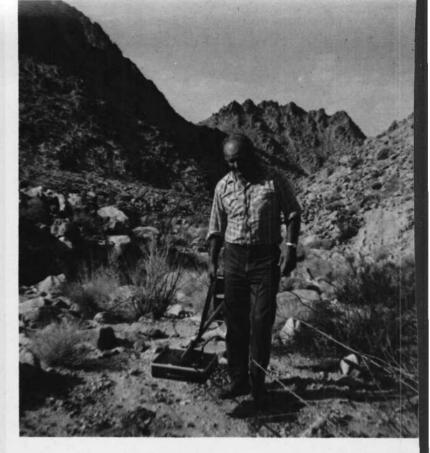
In the course of the early part of the 20th Century, after three centuries of constant use, the arrastre was finally replaced by batteries of stamp mills feeding smelters and cyanide tanks. The era of the arrastre had come to a close.

Today, a circle of rocks found in a mineralized area should be thoroughly investigated. It could mean an old arrastre operation and a search for the source of the ore supply could lead to an old Spanish mine. *Quien sabe!*

17

Found The Lost Shotgun Mine

by George Pfleger



Legends and tales of lost mines have given the Sheephole Mountains a reputation for harboring gold enough to pay off the national debt several times over.

Treasure hunters and prospectors have been searching these bone dry rugged hills in Southern California's San Bernardino County for almost a hundred years and to this day no one has been known to have come up with anything more than tired feet and a healthy tan. The only mining evidence you will find is the Sheephole mine in the northern end of the mountains right at Sheephole Pass.

I am one of the untold scores who have trudged the canyons and ridges of the rocky range seeking a fortune at the end of a legendary rainbow.

The failure of so many to locate any of the lost bonanzas has raised suspicions in the minds of this writer that to protect the location of their secret mines, the oldtime miners, long deceased, merely mentioned the Sheepholes to sidetrack any fortune seekers who may try to find the source of their wealth.

At least three lost mines have been accredited to the area, the "Lost Shotgun Mine," a lost "Spanish" mine, and a ledge of almost pure gold alleged to have been found by four men at the turn of the century.

DESERT Magazine receives dozens of articles every year on lost mines and hidden bonanzas. Most of the manuscripts are merely a rehash of previous articles. When there are new facts—or legends—we print them. Seldom, however, do we receive articles on lost mines found, especially one of this caliber.

So scratch one lost mine, but don't stop searching. Here's proof they can be found!

The California Mining Journal in the January, 1965 issue, ran a story that tells of a vein of gold eight to ten inches thick being found by four men around 1900.

Three of them died in a shootout over whether or not the discovery should be made known to the world. Also, each man wanted it all for himself. The lone survivor, after giving his departed comrades the traditional sendoff and burial, arranged the headstones on the three

graves so as to point out the mine on the face of the mountain. The man seems to have vanished at this point.

In 1914, two prospectors spread news around Banning of their finding the fabulous mine. They said it was close to three graves, 200 yards away and up on the face of the Sheephole Mountains. This is the extent of the information on this mine and it has never been known to have been openly worked.

The "Lost Spanish Mine" story also

started at the beginning of this century. This tale was told by John D. Mitchell in *Desert*, October, 1951.

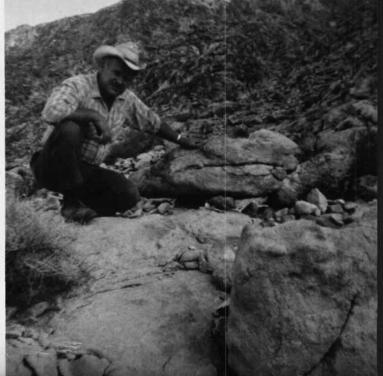
His research turned up the name of Hermit John, an old desert rat known to most inhabitants of the region. It seems the old man had made a very rich discovery of gold in a vein of gray quartz with rusty iron. The mine appeared to have been an old Spanish working, suddenly abandoned about 300 years ago; tools and equipment were strewn about as if Indians had attacked and driven them off. This mine, according to the story, is also supposed to be in the Sheephole Mountains.

The gold was spilled on the platform of the railroad station at Amboy. Old John had unloaded six ore sacks from his burro's backs and one of them tore open exposing the jewel rock; a term commonly used in mining circles to describe such rich ore.

If John had arrived at Amboy as Mitchell's story says he did, from the east, his starting point couldn't possibly have



In his extensive search for the mine, the author (above, left) used a metal detector for soundings. Erected by Indians, the turtle-like rock (above) was first indication water existed in the area. Clearly defined Indian trails (right) lead directly to the spring. Author was about to abandon search when he made his discovery.





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The author found the Lost Shotgun Mine "just around the bend" of these rugged cliffs in the Sheephole Mountains of Southern California's San Bernardino County after detailed research and many field trips.

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been the Sheepholes. This is the part of the tale that has holes in it, because the hermit, being familiar with the desert, would not have taken the long way around. The shortest route would be around the west end of Bristol Lake, saving at least eight miles. To a man on foot, leading loaded burros and short on water, the only way to go.

This would move the location of Hermit John's mine to the mountains lying ten miles east of the Sheepholes, and a place where gray quartz containing iron can be found. Here is an area where conditions are more favorable. There are narrow veins of gray quartz in the central area of the Sheepholes, on the west side, but they contain no minerals.

Now to the story of the "Lost Shotgun Mine." This was virtually an unknown bonanza first discovered in 1873. It was not heard of again until January, 1952 when Desert published a story giving what little information there was avail-

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Box 276 Tolleson, Arizona 85353 able on it and this was gleaned from some old letters found in an ancient house being remodeled in northern California.

The correspondence tells the sad tale of a miner who claimed he had found a rich placer mine and was rewarded not only with wealth, but with painful injury and eventually, death.

The way it goes, a prospector named Long was mining placer gold in the vicinity of the Sheepholes and had accumulated about 100 ounces during several trips he had made to his site. Rotten luck dogged him on his last expedition and an accidental fall in the rocks near the mine resulted in crushing his leg and side so severely that he had to abandon his shotgun and other equipment and crawl toward civilization carrying his gold and only a small amount of water that, due to a raging fever, didn't last long.

Long died of his injuries a short time later in San Bernardino. Before he died he wrote the above mentioned letters to an old prospecting partner.

In them he describes the mine as being 15 miles almost due east of Dale Dry Lake and in a brush-filled canyon containing a trickle of a spring, which is located up around the bend from the mine. The shotgun would be found stashed under a ledge near the mine. Thus the name, "Lost Shotgun Mine."

Armed with such explicit directions it would seem one would be able to walk right up to the place and start digging gold. Take it from one who failed many times, it's not as simple as that.

The search had been long abandoned and we were just prospecting around one pleasant weekend when we came to a strange sign erected by the Indians. On top of an outcrop of rock at the side of a wash was an oval rock shaped about like a turtle sitting on it, propped up on smaller rocks placed so as to look like legs. On one end is a bulge representing a head. This is the sign used by almost all Indians in the southwest indicating water, an extremely scarce commodity in the great American deserts.

Following this lead, we found additional stone markers in the depths of what must be the world's rockiest canyon. The trail runs for several miles through the mountain to a point where it crosses over a small ridge and into another but not so

Continued on page 32

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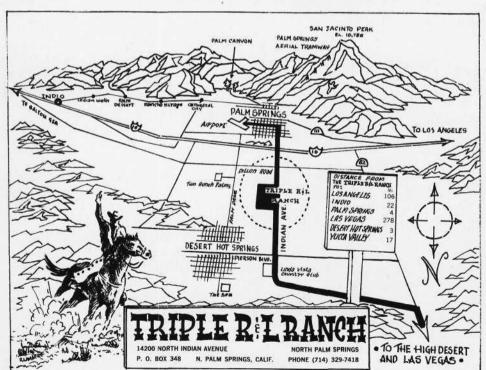
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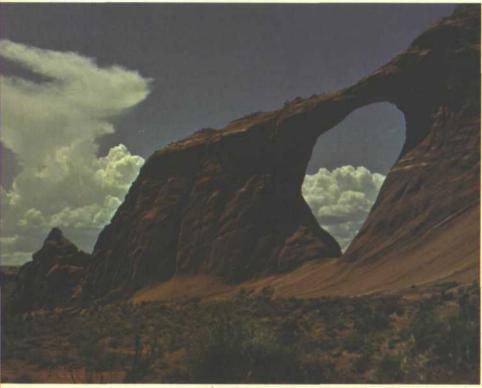
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Arches in Navajoland

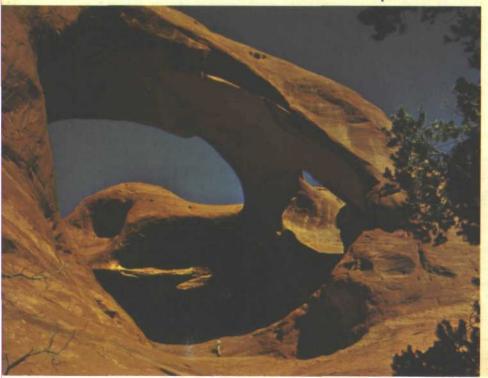
by Bill Knyvett

Photos by Bill Crawley



Hope Arch

Spider Web Arch

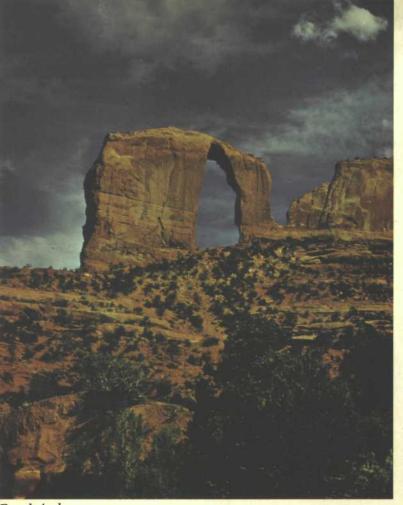


overing a land area of
15,132,143 acres and touching
in part the four states of Colorado,
New Mexico, Utah and Arizona,
the Navajo Indian Reservation is
the largest in the United States.

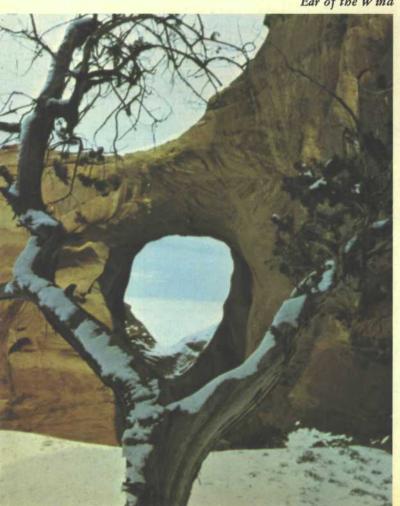
The reservation is home to 115,000 Navajos who tend their flocks today as they did in years gone by.

Along with the simple life is a simple beauty that runs the gamut from rolling hills of scrub to breath-taking canyons with walls of multi-colored stone and mazes of weird rock formations. Dotted throughout Navajoland are hundreds of arches of every description. Formed by erosion and weathering these arches come in every conceivable size and shape. Some can be seen for miles, while others are hidden from view until the last moment. Each arch has its own bit of majesty and even the smallest is impressive. Most are inaccessible to the average passenger car, which necessitates using a 4-wheel-drive vehicle and in most instances the use of a professional guide.

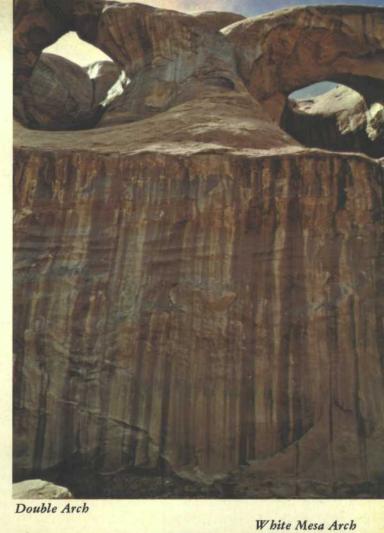
One such guide is Bill Crawley, whose favorite hobby is—
you guessed it—photographing arches. With his camera as a constant companion he is consistently at the right place at the right time which is the key to good picture taking. Through the past six years in operating Golden Sands Tours out of Kayenta, Arizona, with his brother Dillard, he has

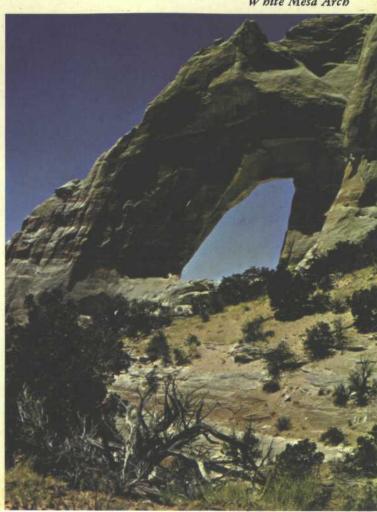


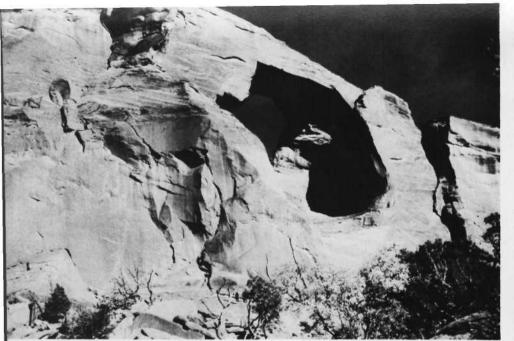
Royal Arch



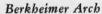
Ear of the Wind







Swinnerton Arch





Moccasin Arch



accumulated a terrific assortment of color slides.

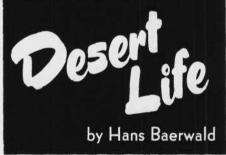
The arches shown here are all in Navajoland. Famous Monument Valley has arches that have been seen by many, while others are in remote areas and have been seen by very few.



About the photographer:

Born and raised in Flagstaff, Bill has always had a love for the wide open spaces and even roams the back country on his days off ever-searching for just one more arch or just the right cloud formation over an old favorite.

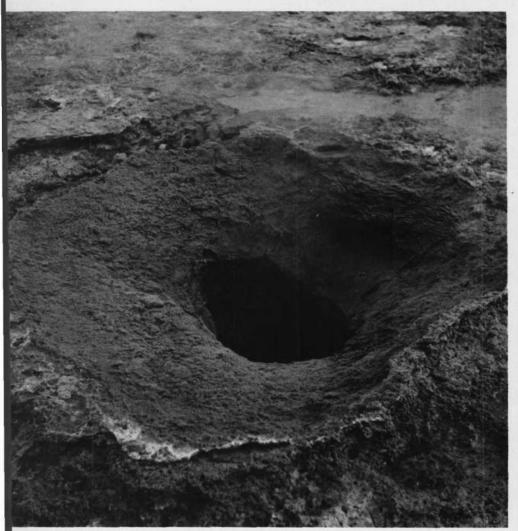
Using a Pentax camera with both telephoto and wide-angle lenses and shooting Kodachrome II Bill has had excellent results in enlarging his slides to salon size which make a tremendous souvenir of a trip to Navajoland.



A roundtail ground squirrel, his bright, alert eyes watching for signs of an enemy, pauses long enough to enjoy a morsel of food. He is nine inches tall with a three-inch tail and is usually found in desert valleys and low mesas. Hans Baerwald used a 400mm lens to capture his subject.



NEVADA'S BEOWAWE



A close inspection of this empty fumarole will let you hear rumbles from deep within the earth as its acrid vapors fill the air.

INTERSTATE 80, Nevada's northern eastwest artery, is a super highway allowing vacationers to dash frantically from point to point on their itinerary with seldom enough time for more than a blurred glance at the passing countryside.

Few travelers notice spasmodic puffs of steam rising skyward in Whirlwind Valley, five miles south of the highway, halfway between Battle Mountain and Carlin. They do not realize they are passing close to the second largest region of thermal activity in the United States.

Seldom visited, the Beowawe Geysers award the traveler with an opportunity to explore a fascinating, geologic phenomenon. (Beowawe is pronounced Bay-o-wah'-wee and is an Indian word meaning "gate"—so named for the peculiar shape

of the hills close to town which gives the effect of a gateway opening to the valley beyond.)

The Beowawe Geyser region is divided into two, distinct areas. Hot springs, pools, fumaroles and geysers will be found on the valley floor. Two hundred feet above, thermal vents have built up a broad sinter terrace. It stands out like a white bench along the dark abdomen of the basalt-covered mountain.

Throughout the valley area there is the pungent tang of acrid vapors. Steam clouds belch forth from small openings in the earth and ominous underground rumblings can be heard. A great pool of emerald-green water bubbles and burps, while nearby, a smaller pool churns in violent fury. With a deep roar and a



whistling hiss, a geyser of boiling water will leap into the sky from what earlier appeared to be an inactive vent in the earth's crust.

Wrapped in the misty vapors at the center of this thermal region, one feels as though time has suddenly retreated. It could be the dawn of the Cenozoic Era, 70 million years ago, when the earth erupted into a fury of volcanism unequal-

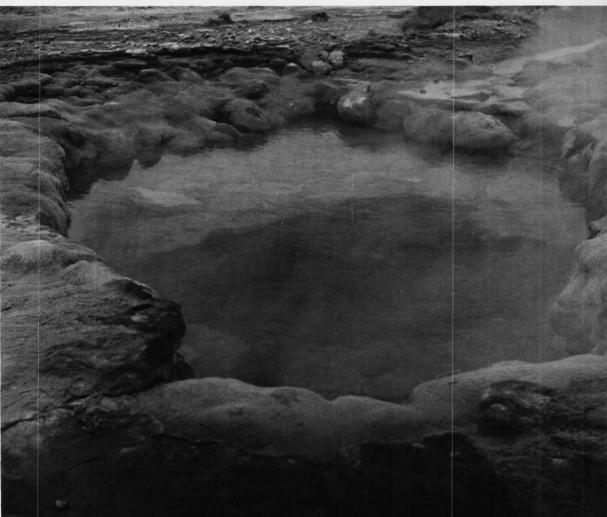
Nevada Field Trip

GEYSERS by Mary Frances Strong

Photos by Jerry Strong



Looking east across a boiling spring, a geyser starts to erupt. Tuscarora Mountains are in background.



One of the large, emerald-green pools (above) bubbles quietly. The white, sinter-covered basin between the two areas of thermal activity (below) makes an excellent camping site. A portion of the geyser-built terrace is in background.

ed since earlier pre-Cambrian Time. The rumbling-the earth shaking, seems as if a volcano might be in the labor of birth. However, hydro-thermal areas denote dying volcanism. They are the surface manifestations of descending ground water which, upon contact with hot, subterranean rock, rushes to the surface through cracks and crevices to cause varied geyser activity.

A climb to the terrace will impress the most blase traveler. The bench is nearly three-quarters of a mile long and about 150 feet wide. It appears to be alive with all types of thermal activity. There are boiling springs in a myriad of sizes. Deep, dark holes of fumaroles dot the bench and colorful hot pools are lined with







pearly opal. Hot water sputters constantly from a pencil-sized vent which spasmodically burps water 10 inches or so into the air. Nearby, a larger geyser sends sheets of water skyward.

Each geyser, fumarole, hot spring and pool seems to have characteristics all its own. Many of the boiling springs have pearly, coral-like collars around their mouths. One pool has built an enormous, vari-colored series of terraces around its cauldron.

There has been considerable interest in the development of Nevada's hydro-thermal areas. They offer a potential source of energy for the generation of electricity. Several exploratory wells have been drilled on the terrace at the Beowawe Geysers. The holes were carefully drilled to encounter the superheated water at subterranean pressure. Upon exposure to atmospheric pressure, the water will flash into steam. This energy can be harnessed and mechanically converted into electricity. At the present time, there has been no further development.

The Geyser Region is easily reached from Interstate Highway 80. Thirty miles east of Battle Mountain and twenty miles west of Carlin, a small sign "Beowawe—5 miles," directs you into this historic back country. The narrow, paved road winds along the southern fingers of the Tuscarora Mountains on the eastern edge of Whirlwind Valley. Sleek, fat, Black Angus cattle graze here. Old, gnarled cottonwood trees march majestically up the valley floor marking the course of the slow-moving Humboldt River. The road soon rounds a bend, crosses the river and the traveler arrives at the old railroad town of Beowawe.

A combination store and postoffice, gasoline pumps, bar, railroad station and several small homes constitute the town. in days gone by, Beowawe was a busy and important shipping point on the railroad. Ore from numerous mines in the surrounding mountains was hauled in and loaded on cars for delivery to various mills. Mining has been at a low ebb for many decades. However, a new gold operation—32 miles south—could produce vast changes in this old and quiet little settlement.

Three miles east of Beowawe is Gravelly Ford, considered by the pioneers as one of the finest stops along the Old Emigrant Trail. The huge groves of cottonwood trees provided them with shelter from the blazing summer sun. Water was plentiful and the valley meadows were lush with wild hay. It was a restful respite in a harsh and unknown land, as well as a place to repair equipment and allow weary animals to rest and graze. During the year 1850, over 45,000 pioneers traveled along this route on their journey west.

Before the coming of the White Man, the Shoshone Indians had established a permanent campground at the present site of Beowawe. They took advantage of the sheltered location, the plentiful supply of water and the abundance of game. They also knew about the geyser area, as many of their artifacts have been found there. It is quite possible they used the steam and pools for hot, medicinal baths; though there is nothing to substantiate this except such use occurred in similar areas.

From Beowawe, State 21 crosses the railroad tracks and becomes a narrow ribbon of asphalt heading south-westerly as far as the eye can see. Just 1.7 miles from Beowawe, a rather disconcerting sign "Dump Grounds" announces a dirt road leading off to the northwest. Turn right

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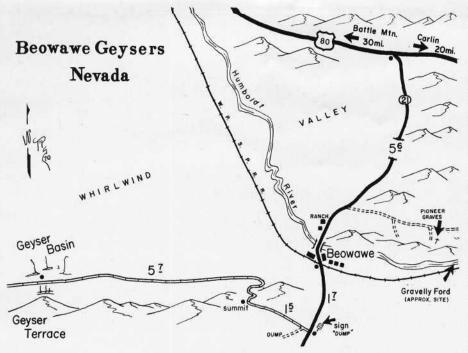
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onto this graded road, bypass the dump and continue over the summit of the hills. The road now rapidly drops into Whirlwind Valley, curves sharply west and runs along the edge of the naked mountains. Ahead will be seen dozens of steam clouds puffing skyward in a symphony of rhythm. The road leads through the heart of the thermal activity, a total distance of 7.2 miles from Highway 21. A section of this road is alkali ground and may be impassable when wet.

The clean, white, sinter-covered flat between the two thermal areas makes an excellent camping site with hot water literally at your door! There are no overnight accommodations in Beowawe.

Caution should be exercised when visiting the geysers. It is best not to stand on the edges of the vents or pools. Children and pets should not be allowed to run free. While we found no soft or dangerous areas, this condition is subject to change. The use of good, common sense will make your visit both enjoyable and safe.

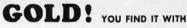
The Beowawe Geysers are on private land but the area is open to visitors. It will remain so, as long as outdoor manners are observed. Please leave no evidence of your visit.

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In the heart of the geyser region, the constantly changing sounds and activities produce strange and eerie feelings in the observer. Deep within the dark recesses of the earth, Old Mother Nature seems to be vigorously stirring her cauldrons. The ground trembles and shakes. The geysers gurgle, boil, hiss and spout in an unearthly rhythm. What devilment is Nature planning? Are new mountains to rise or old ones to be destroyed? Imagination can run rampant at the Beowawe Geysers. With beauty second to none and in an unspoiled setting, they are one of Nature's rare jewels in the Nevada back country.



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CENTURIES OF history are literally carved into the four timeless granite faces of a 150-ton monument recently completed at the village of Temecula in the heart of Southern California's back country. Perhaps no other monument in the world compares in design to this massive memorial to pioneers who visited Temecula in days gone by.

No single part of it has been touched by man's modern tools; no single part has been polished to detract from the beauty given it by nature during eons of time. Even the 56 names engraved on the faces of its 15-ton monolith were lettered by hand. Only a sand-blasting machine, manned by a free-hand sand-blasting artist, was used to cut the letters deep into the stone.

When the 300 citizens of Temecula a year ago discussed a proposal to build a monument honoring pioneers who contributed to the village's rich historic background, Sam Hicks, writer, rancher and member of the late Erle Stanley Gardner's staff for more than 20 years, listened intently—and went into action.

Being a true son of the West and lover of nature, Sam relied on nature for all parts of the monument in the plans he drew. From a long-abandoned quarry on the Ed Querry ranch, high in the hills south of Temecula, hand-cut granite blocks, some weighing more than a ton, were brought to the building site. The blocks had been cut three-quarters of a century ago for use as curb stones in San Francisco and for such other projects as Riverside County's court house. When cement factories put the granite quarries out of business, many cut stones were left lying about the ground. It was these stones that went into the three-step base of the monument.

Penetrating the tangled mass of growth that now covers the abandoned quarry, Sam selected a boulder remarkably well suited to be the monument's center piece. This stone had been split as a first step in the process of converting it into blocks when the quarry ceased operation. The base of the monument is square and 20 feet across at ground level. It is four feet high. Its top surface has been finished with smooth cement, and embedded in the cement is the striking monolith that towers 13 feet above the green lawn.

Even the land upon which the unique monument stands is bathed in an aura of romantic history. Originally home of the Temecula Indians, it served, in succession, as a grain field for Mission San Luis Rey, as a vital portion of Mexican-land-grant Rancho Temecula, as a sheep ranch under ownership of Juan Murrieta, and as a part of Temecula's school grounds before being transferred to the Temecula Chamber of Commerce, as a monument site.

After the final name had been engrav-

ed on the towering boulder by a free-hand artist perched high on a step-ladder, it was found that the total cost to the community was less than \$800, almost half of which had been donated by the Querry Ranch along with the granite blocks and boulder. An architect viewing the finished job estimated that its cost should have approximated \$40,000. Community spirit, plus the unrelenting drive and leadership of Sam Hicks accounts for the vast difference between the two figures.

The romance of early California and of the entire West is deeply etched in the names on the monument. Among the names is that of Jean Baptiste Charbonneau, who, as an infant, accompanied Lewis and Clark to the Pacific on the back of his Indian mother, Sacajawea. In later life he was a scout with the Mormon Battalion on its march from Santa Fe to Temecula in 1846-47. But long before then — back in 1797 — Father Juan Santiago visited Temecula and won a place on the monument.

The list of names reads like an odyssey of the past: Pedro Fages, first Spanish explorer of the California back country; Mariano Payeras, successor to Junipero Serra as president of the Franciscan Missions; Antonio Peyri, for 33 years guardian of mission affairs in the country that surrounds Temecula; and Pio Pico, last Mexican governor of California. Through the slow unfolding of the years all of these men trooped down into Temecula and have found a permanent place on the monument.

Among early Americans whose names have been preserved are Ewing Young, who reached Temecula in 1832; Kit Carson, who passed through the valley on several occasions; David Jackson, for whom Wyoming's Jackson Hole is named; Thomas (Pegleg) Smith, who returned to Temecula on his way to attempt a rediscovery of a mesa of black golden nuggets; John Trumbull Warner, who established Warner's Ranch and the first trading post on the Southern Trail; and Cave Johnson Couts, who established Camp Salvation where the city of Calexico now stands.

America's early military leaders also entered the valley. Philip Saint George Cooke and John Charles Fremont are among them. James Henry Carleton

led his army east to aid the Union in the Civil War, and Albert Sidney Johnston followed the same trail to aid the Confederacy.

Thundering Butterfield stagecoaches passed and left such names as Waterman Lilly Ormsby, who reported passage of the first Overland Mail for the New York Herald. To receive the mail brought by Butterfield stages, Louis A Rouen, Temecula's—and inland southern California's—first postmaster is there.

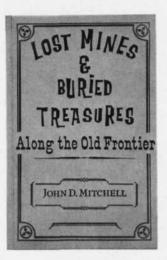
The wail of a locomotive blends with

the valley's quiet. Frederick Thomas Perris, civil engineer for the first transcontinental railroad to reach San Diego—the California Southern—finds a place on Temecula's *They Passed This Way* Monument.

For those unfamiliar with the names, a 60-page book containing short biographies of all of those named, and a selection of tales of old Temecula, is available. The monument and the book will whet your appetite for more knowledge of California's heritage.

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I FOUND THE LOST SHOTGUN

Continued from page 21

rocky gulch on the other side.

Here the dim trail fades. Looking the canyon over on my last trip into the area, I discovered a claim monument above an old camp that looked like it hadn't been used for many years. Lying along side



a big boulder were some old burro shoes, bent from the effort of being torn from the animal's hoofs, and still holding the nails which once kept them in place.

Our location was roughly 15 miles east of Dale Dry Lake, where Long claimed to have mined his gold in 1873.

If this was the lost mine there should be a spring just up the canyon and around the bend and, just as described, there was, but it was covered with at least three feet of sand and required much digging to reach water. The broken Indian pottery scattered over the old trails leading in from several directions indicate it was well known to the early inhabitants of the area that water existed here. This was indeed the lost mine we had hunted for in the past!

Miner Long couldn't have picked a more beautiful locale in which to find his gold. The surrounding broken hills turn to many shades of pastel reds and browns when the sun begins to set, and the rolling desert off to the northeast fades into the blue haze that seems to settle with the arrival of dusk.

We used the old campfire stones that



hadn't been used for almost 100 years and burned wood from his old supply still growing in the canyon in dense profusion.

In the morning we awakened to a blazing dawn and reluctantly rolled out to build a fire and make coffee, the smell of which brought the others crawling from their sleeping bags to greet the new day. Then we searched the area.

We found a metate used by the Indians to grind corn or whatever it was they ground, a whiskey bottle, purple with sun and age just lying on top of the ground and tin cans the likes of which have not been seen by many except in private collections.

An old file used to trim his burro's feet for a new set of shoes was discovered jutting from a dirt bank along with an unexplainable piece of iron that might have been used as a rock chisel. The most exciting find was just above the spring. A large, flat-faced rock with the words 'CANTEEN TANK' scratched in it, possibly by Long himself.

Two more claim monuments were found indicating about five acres had been staked on the canyon and the wash just below it justifying my belief that this was where Long had obtained his gold.

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Markers such as this one left by Indians point direction to water in the Sheephole Mountains.

The only evidence of mining to be found after 93 years are mounds of small rocks, the by-product of a drywasher, a machine that separates gold and other heavy minerals from dry sand.

Satisfied this was the "Lost Shotgun Mine," it was a simple matter to prove gold was present. Digging in the same places that the old-timer did, and panning out sand from bedrock level we found signs of fine flour gold almost everywhere. Although the mine is far from being a bonanza, it is well worth owning-if only for its historical value.

A claim has been filed on 20 acres covering the most promising area, including the spring. It has been named "The Lost Shotgun Mine." This may turn out to be one of the best placer discoveries of the century or it could just be another mediocre mine that was oversold, as was the custom back in those early days.

The Indians get most of the credit for the re-discovery of the "Lost Shotgun Mine." The trail they left so well marked that others of their day could survive in this harsh land leads directly to the spring which was the key unlocking the secret of Long's alleged bonanza.

Benefit from the experience of this prospector. If you're searching for lost mines, or gold, it would be wise to bypass the Sheephole Mountains and look in the mountains lying to the east. There you may find your "El Dorado."



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Along the road to Valle Redondo a roofless adobe stands amid boulders and olive trees. The community was once much larger.

by Dick Bloomquist

THE BORDERLANDS of Baja California are a lively mixture of valleys, foothills, mountains and deserts running from the Pacific Ocean to the Colorado River. They are physically close to the urban world of coastal southern California, but far removed from the hurry and congestion often in evidence north of the line.

Numerous unsigned byways enter the lesser-known sectors of this border country, sometimes leading the traveler to hidden valleys and remote settlements where the pace of life and the very look of the land have a special charm. An attractive example is the road to *Valle Redondo* (Round Valley), a small farming community between the Tecate-Tijuana Highway 2 and the international boundary.

This route, which has its rough and rutted stretches yet is easily passable in a conventional automobile (in dry weather, at least), begins inconspicuously eight miles west of Tecate on Highway 2. An unmarked dirt road strikes north from the pavement at this point, then bends to the west and ultimately rejoins Highway 2 after nearly 13 back country miles.

The road to *Valle Redondo* can be recognized by the olive trees which fringe it on both sides for the first halfmile. To the left of the trees stand the substantial house and outbuildings of *Rancho El Gandul*, where grapes, olives, and hogs are raised. *Gandul* means "loafer" in Spanish, but the ranch's apparent prosperity belies its name.

The dirt track soon abandons its green arbor and veers abruptly to the right, passing a whitewashed house with a giant prickly pear in its front yard, then cresting a hill and crossing the tracks of the San Diego and Arizona Eastern Railway. Beyond, the road dips into a picturesque hollow planted with grapes and olive trees. A roofless adobe ruin stands by

BAJAS

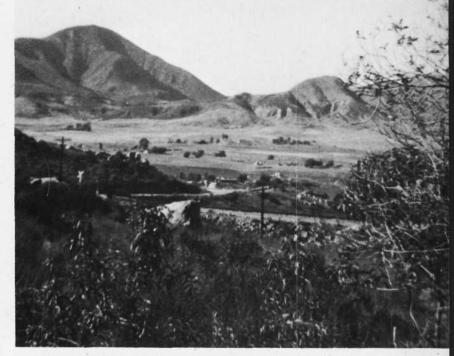
A pleasant and easy passenger car trip into peaceful Round Valley just below the Mexican border between Tecate and Tijuana where you will find the "world of manana."

> the trees, which were laden with fruit when we passed by in December.

> A fraction of a mile past the old adobe, the winding byway comes to a "T," with the left arm leading toward Valle Redondo. We skirted the Gavilan (Sparrow Hawk) Ranch, then began the brief descent into Round Valley itself. The downgrade provides an attractive prospect of the smooth valley floor and its encircling hills. A few dwellings and knots of vegetation mottle the plain, while in the foreground the tracks of the S.D. & A.E. Railway once again invade the landscape.

The road soon crosses them and settles down to a reasonably straight course across the valley. We paused to photograph an impressive home with tile roof and whitewashed walls which stood vacant along the road's northern edge. The exterior appeared to have been just completed, and apparently more work remained to be done inside before it could be occupied.

ROUND VALLEY



Although Valle Redondo is just below the Mexican border between Tecate and Tijuana, it seems far removed from the urban world.

The house stands just outside a thin line of buildings which mark the settlement of *Valle Redondo*, set within the valley of the same name. A few small homes, a church, the *Tienda del Valle* (Store of the Valley), and some mellowing adobe ruins make up the town today. On one of the abandoned adobes, a faded Coca-Cola sign painted on a wall is still legible.

Years ago Valle Redondo may have been larger than it is today, for it once lay astride the main road joining Tijuana with Tecate and Mexicali. In addition, the town borders the right-of-way of the San Diego and Arizona Eastern, a line completed in 1919 by sugar magnate John D. Spreckels. The railroad became known as "Old Impossible" for the series of tunnels and trestles which carried it through the awesome Carrizo Gorge. For a time it did a thriving business in passengers and freight, but then fell upon hard times. Now only freight trains rum-

ble past Valle Redondo and down to the Carrizo.

West of town our route once again crossed the railroad and said goodbye to Valle Redondo. Ranches bordered the road at intervals as we continued westward. We passed one small place with bright yellow walls, followed by another with an equally brilliant white decor. Called Rancho El Penascal (Rocky Hill Ranch), it lies amid granite boulders, and specializes in the raising of chickens and hogs.

Four-and-one-half miles west of the town of *Valle Redondo* is *Matanuco*, a scattered collection of chicken ranches without any apparent nucleus. Just beyond *Matanuco* a side route forks to the south (left), joining Highway 2 near the El Florido Cafe two and one-half miles distant. We continued on a straight course, however, and after two more miles entered a vast olive grove fronting both sides of the road. The trees most

probably are on lands belonging to *El Florido* (The Flowered Place), the sumptuous estate of Miguel Aleman, former president of Mexico. The white-walled ranch house can be seen from Highway 2 about 17 miles west of Tecate.

After nearly one-and-one-half miles we left the grove behind. Soon afterward we dipped under the wooden trestle of the San Diego and Arizona Eastern and gained paved Highway 2 at a point 20 miles west of Tecate and 11 miles east of Tijuana.

Our road had been slow and sinuous, and hadn't lacked for roughness, yet for those very reasons had permitted an intimacy with the land not offered by high-speed pavement. And the land does have a pure Mexican flavor. Despite *Valle Redondo's* location only three miles south of the international line, it has the look of country found deep in the interior of Mexico, far below the northern borderlands of Baja California.





GIVE **Descri**Subscriptions as Gifts

Rambling on Rocks

by Glenn and Martha Vargas

The story of mineral crystals is complex, steeped in mathematics, but also it is very captivating. Nearly all minerals form crystals, and these are known as the crystaline minerals. Those few that do not are known as the amorphous minerals, or minerals wiithout form. The crystal shape of each mineral is nearly always different from all others, but all crystals fall into only six basically different systems. In turn, each of these systems are varied to some degree, and each mineral also varies.

The mineral calcite shows over 100 different forms, but all of them still fall within certain mathematical limits dictated by the hexagonal system to which it belongs. To show the possibilities of this mathematical situation, it was found that the hexagonal system had a possible form that had not been observed. In 1906, in a remote locality in San Benito County, California, that mineral was found. It

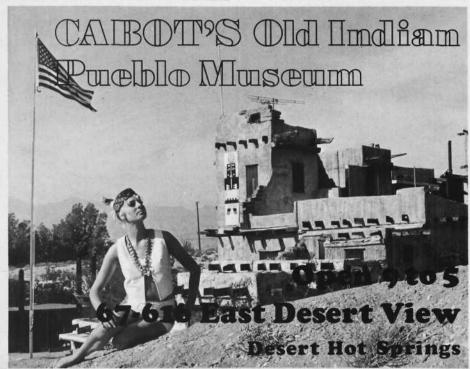
was named Benitoite and, even though very rare, it is one of the most soughtafter of gems.

Where can we see mineral crystals? We can start in our kitchen by shaking some salt into our hands. The mineralogist calls it halite. If we examine it with a magnifying glass, we find that each grain is a nearly perfect cube. The cube is the basic form of one of the six systems. Thus, common salt is a member of the cubic crystal system. Note that a cube has three dimensions; two horizontal and one vertical, all of equal length. Nearly everyone has seen a quartz crystal, also called rock crystal. If the crystal is looked at from the end, it will be found to be hexagonal, and is a member of the hexagonal crystal system. A hexagon has four dimensions, three horizontal and one vertical.

To define a crystal is not easy, unless we use technical language. If we dispense with most of the technical language, and somewhat with our tongue in our cheek, we can only say that a crystal is a solid geometric form, bounded by flat faces. Perhaps this is too simple, because the six systems allow the exhibition of almost any geometric form as long as it basically has only three or four dimensions. There are no fives, sixes, sevens, etc., only three and four. Only one system has four dimensions, the hexagonal. The other five have only three, and four of the five differ from the cube in the various lengths of these dimensions and the angles at which they meet.

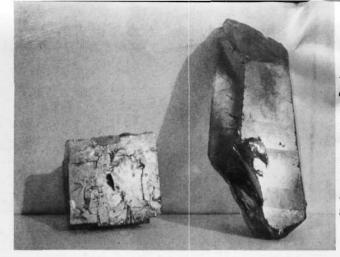
The many shapes of mineral crystals can be very intriguing, but that is not the intent of this column. The story of how crystals grow, and the forces that control this growth is also of interest. Yes, crystals grow; not like a plant, but they start from seemingly nothing, and may attain great size. The mineral feldspar is used in the making of glazes for pottery. One feldspar crystal was so large that it by itself became a quarry.

To understand crystal growth, we can go back to the shaker of table salt. The little cubes were grown in a refinery. The raw material came from the seashore, or



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Atoms of sodium and chlorine lock together to form a cube (left) such as salt whereas quartz (right) is made of one atom of silicon and two atoms of oxygen in a hexagonal form.

a salt mine. After all impurities were removed, a salt solution was evaporated in a huge tank. The water was removed very carefully under exacting conditions of temperature, pressure and salinity, to where there was more salt than the remaining water could hold in solution. At this point of saturation, atoms of sodium and chlorine began to lock together in groups of four, in the form of a cube, as on the left in the illustration. As more water was removed, more atoms of these two elements locked onto the first four, and the beginning of a crystal appeared. This was going on all through the tank at the same time. The process was continued until all of these many crystals had grown to the size just right for shaker use, then it was suddenly stopped. The crystals were dried and packaged for our use.

This is similar to what goes on when crystals grow in nature. The things that are missing here are controls of heat and pressure. Natural crystals grow out of a cool water solution, from super heated water, or from hot vapors.

Quartz is a very common mineral, and its crystalization behavior has been very carefully studied. It is one of the minerals that will form crystals at a relatively low temperature. Thus it has been reasonably easy to duplicate the process of quartz crystalization in the laboratory. Under natural conditions, the story of quartz crystalization goes like this. The first requisite is a super heated water with temperatures well above 1000 F., in which is dissolved a large amount of quartz. Geologically, this is a low temperature, and quartz will disolve at these temperature just as easily as salt will at room temperature. If, within some type of enclosure, the temperature is allowed to slowly drop to 1063 F., some of the molecules of quartz are forced to attach themselves to the wall. Molecules of

quartz are made of one atom of silicon and two atoms of oxygen. These arrange themselves into a pattern which is hexagonal, and are the beginning of a quartz crystal, on the right in the illustration. The first crystal that starts has a great attraction for the molecules surrounding it. If the temperature drops very slowly, the first crystal may completely incorporate all of the available quartz, and the enclosure will contain only one large crystal.

If instead, the temperature drops fairly rapidly, more crystals will start, and each will exercise the same attraction in their area. If the temperature should drop very suddenly, multitudinous crystals will begin to grow, but before they can attract many molecules, other crystals start to grow upon or beside them, and the result is a solid mass of microscopic crystals. This is known as cryptocrystaline quartz, which we call chalcedony or agate. The making of the salt crystals was a bit slower than this rapid growth situation.

Let us go back to where the temperature dropped at a medium rate. We now have a number of crystals growing, each adding groups of molecules in a hexagonal pattern. Some crystals are larger than others; some are close to others. The larger ones usually grow faster than the smaller ones, as their attraction for raw material is greater. If the temperature drop stays constant, many of these large and small crystals that are adjacent will combine into groups by the simple act of growing larger and taking up the space between, and finally touching. If conditions continue, some of the larger ones may enclose some of the smaller ones.

As temperatures drop well below the magic 1063 F., all quartz growth will finally stop. The result—at some later date, a collector may unearth a fine quartz crystal group for a display specimen.

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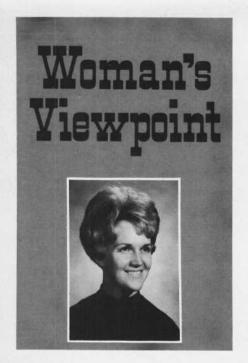
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ARE YOU one of those people with stooped shoulders who watches the ground for pretty stones? Are your pockets bulged and out of shape from lugging rocks home after every hike? Do you have boxes of rocks under your bed or out in the garage? If so, you have a disease known as rock pox and probably need some way to display your rock treasures.

One way to show small stones is on a mobile. By hanging the mobile from a patio where there is a breeze or inside the house by a furnace vent, the mobile will be in constant motion. The interplay of movement and light on each stone makes the mobile fascinating to watch every hour of the day.

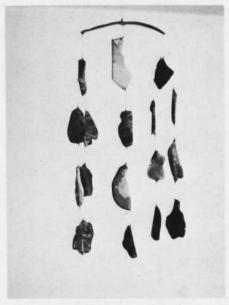
A mobile needs a six to eight-inch arm to hold the dangling stones. The arm of the mobile in the illustration is a piece of abalone shell. The shell is an excellent material because it is light in weight, strong, and attractive. A length of wood could also be used.

All stones in the mobile are fastened to fishing line with small metal prong-like "findings" sold in rock and hobby stores. The prongs are usually used to hold small stones for pendant necklaces, but also work well with mobiles. The stones are glued in the center of the prongs and the metal is bent to fit the contour of the rock.

Glue a prong on the underside of the arm at each end. Find the center of the arm and glue a flattened prong on top to hang the mobile with. Fine fishing line is used between the stones to give them free movement. The line is strung through the loop of the prong that ordinarily holds a chain.

From the ends of the arm attach stones at random one after another. Experiment to make sure the weight on each side balances so the arm is always perfectly horizontal. Use stones that are between one and two inches long. Since the mobile is rather heavy be sure the line that goes from the main arm to the ceiling is strong. A brass cup hangar screwed into an archway or patio beam makes an attractive and sturdy anchor for the mobile.

The fishing line between each stone is about one and one-half inches long. If you cut a short piece of line the knots are difficult to tie so use plenty of line and then cut off the ends close to the knot.



The stones can be used as found in nature or they can be sliced, tumbled and polished for truly gorgeous mobiles. Feldspar, serpentine, travertine, agate, jade, obsidian and pertified wood are all attractive materials for a stone mobile.

If you haven't become addicted to collecting rocks and would like to make a stone mobile, look for rocks where new highways and railroads are being cut. Another rich source is the area surrounding a mine, quarry or gravel pit. Stream gullies usually produce some interesting mobile material too. We westerners are lucky to have an abundance of easily accessible rocks and gem stones to make extraordinary mobiles.

Now for a hodge-podge of recipes from you readers:

Mother's Corn Meal Pancakes

- 1 cup yellow corn meal
- 2 tablespoons flour
- 2 teaspoons baking powder
- 1 teaspoon each salt and sugar
- 1 cup milk
- 1 egg
- 2 tablespoons oil

Combine dry ingredients thoroughly, then add milk, egg and oil. Beat lightly. Fry at 425°. Makes 15 to 20 four-inch pancakes. (Wouldn't these be delicious with the wild berry syrup described in September?)

Herbert J. Summers, Pasadena, Calif.

Beer Braised Beef with Sausage

2-3 lbs. round steak

1 lb. Polish sausage

1/2 lb. thick-cut bacon

- 1 pint beer
- 1 large onion
- 1 clove garlic

Chicken bullion cube

Salt and pepper

Thyme (pinch)

flour

1 6 oz. jar marinated artichokes

parsley

Pound flour, salt, pepper and finely chopped garlic into thick-cut steak with edge of plate. Fry bacon and drain. Brown steak in bacon fat and transfer to thick iron skillet. Add cooked bacon and sausage. Stir together with sliced, peeled onion. Cook only until onion becomes transparent. Pour off excess grease.

Reduce heat and add one pint of beer, artichoke hearts, thyme and bullion cube. Cover with a tight-fitting lid and allow to simmer slowly for an hour and a half. Serve with rice and a slightly dry red wine.

Ross Figgins, Pomona, Calif.

Golsen a. Robison

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Calendar of Western Events

This column is a public service and there is no charge for listing your event or meeting—so take advantage of the space by sendin your announcement. However, we must receive the information at least three months prior to the event. Be certain to furnish complete details.

JANUARY 18, INTERNATIONAL EXHI-BITION OF NATURE PHOTOGRAPHY. Chicago, Illinois. Deadline January 18. For information on entries write Nature Camera Club, 407 Eugenie St., Chicago, Ill. 60614.

JANUARY 31-FEBRUARY 8, FESTIVAL OF ARTS, Tubac, Arizona. Sponsored by the Santa Cruz Valley Art Association. Paintings, crafts and other exhibits. Admission free.

FEBRUARY 12-21, NATIONAL DATE FES-TIVAL of Riverside County, Indio, California. This is the 25th year of the world-famous event with industrial, recreational, agricultural exhibits plus spectacular displays and pageants.

FEBRUARY 20-21, SAN FERNANDO VAL-LEY GEM FAIR 1971 sponsored by the San Fernando Valley Gem Fair Association, Devonshire Downs, 18000 Devonshire St., Northridge, San Fernando Valley, Calif.

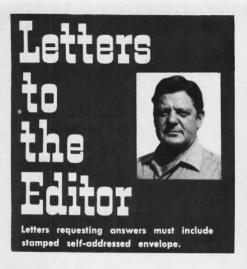
FEBRUARY 20 & 21, CALIFORNIA ASSO-CIATION OF 4WD CLUBS 12th annual convention, Elks Lodge, Santa Maria, Calif-Convention headquarters, Holiday Inn, 1405 East Main Street, Santa Maria, Calif. Trailer and camper space at Santa Maria Fairgrounds. For information write Peter K. Weber, P.O. Box 99, Santa Maria, Calif. 93454.

FEBRUARY 20 & 21, ANTIQUE BOTTLE SHOW AND SALE sponsored by the Peninsula Bottle Collectors of San Mateo County. Fairgrounds, San Mateo, California. Free parking and admission. For information write Jess Jones, P.O. Box 886, Belmont, Calif. 94002.

FEBRUARY 27 & 28, BOTTLE SHOW AND SALE sponsored by the Antique Bottle Club of Orange County. Retail Clerk's Union Hall, 8530 Stanton, Buena Park, Calif.

JANUARY 29 & 30, PALM SPRINGS AN-TIQUE SHOW & SALE, Features representative booths of more than 75 antique shops from throughout the United States. Riviera Hotel Convention Center, Palm Springs, Calif.

MARCH 13 & 14, GEMS OF THE WORLD SHOW sponsored by the Northrop Recreation Gem & Mineral Club, Northrop Recreation Club House, 12626 Chadrom Street, Hawthorne, Calif. Parking and admission free. Write Bill Mary, 17210 Spinning Ave., Torrance, Calif. 90504.



Marta Becket . . .

We were very much interested in your November issue of Death Valley, but why no mention of the hotel at Death Valley Junction (State 127 and 190), only 29 miles from Furnace Creek Inn?

Borax Smith built the hotel at the turn of the century, but in 1941 it was left to ruin. In the last few years it has been rejuvenated and 20 rooms are now in good condition.

The old movie theatre is now the Amargosa Opera House and on Friday, Saturday and Monday evenings Marta Becket presents her ballet. She and her group have done wonders to restore the building since coming there from the east. It is a most unique and memorable experience for anyone who enjoys the theater of yesteryear.

CONSTANCE DICKERSON, Hesperia, California.

Editor's Note: Thanks to Reader Dickerson and others who have told us about Marta Becket and the Opera House. Desert's Field Trip Editor, Mary Frances Strong, is doing an article on the area which will appear soon in DESERT.

Baby's Grave . . .

While reading DESERT Magazine (July '70) I came across a letter from Jim Osborn about the grave ghouls.

That little grave stuck in my mind, and then I remembered that in May of 1969 when we were rock hunting in that area, we came



across several graves. We took many pictures that day, including one of the grave that he mentioned. Thought that he and some of the other readers might be interested in seeing it.

I was very dismayed to think that people would be so terrible as to destroy a baby's or any other ones grave.

MRS. CLARENCE STEGALL, Glendora, California.

Monte Cristo . . .

The real story about the Monte Cristo Mine (November '70) is not a short one and its actual production of gold was far beyond that which is recorded. I know—I worked in the mill during 1926 and 1927 during its most productive years as the assayer and amalgamator. The owner, Fred Carlisle, spent most of his time in Los Angeles and while away the mine was being high-graded.

Two men working there stole the Monte Cristo blind. Many a time I saw these two

men coming out of the Number 1 drift fairly staggering under the weight of the gold ore they had hidden in their clothing. The Bureau of Mines report this mine produced \$70,000 is far from the right figure. It was closer to \$200,000 with most of it going to the high-graders.

Although I knew what was going on, I dared not open my mouth for fear of my life. So in the fall of 1927 I quietly left and went to work for the Yellow Aster Mine at Randsburg.

There are three Monte Cristo mines in California; two in the southern part and one in the north. There are also two by that name in Oregon and one in Washington.

NAME WITHHELD AT WRITER'S REQUEST.

Melones Dam . . .

Relative to your September '70 issue on the Mother Lode Country, I have spent many delightful hours in the area around Melones. As the article states, a new dam will be built "upstream" and the area will be covered with water by 1972. Actually the new dam will be built below the present Melones Dam.

I am told the government has bought the Robinson's property at Melones and I do not know the situation with respect to gold dredging there. However, I believe there are many river pockets scattered along the Stanislaus that contain gold. Those interested in dredging should check with the Real Estate Division of the United States Engineering Office in Sacramento.

There might be a good story for your magazine relative to a vast amount of mercury that was lost from the Melones Mining Company Mill in the Stanislaus River about the turn of this century. It should be in one of the bedrock pockets opposite the upper end of the town of Melones.

WILBUR H. DUNCAN, Decatur, Illinois.

To A Lady Called The Desert

It was the day before Christmas and I had spent my share in the market place to insure a Merry Christmas. My evening was to be shared with people I hardly knew. The stores were full of people purchasing happiness on the installment plan or buying it by the bottle. Suddenly I wanted no part of it, I wanted to be with you.

I told my family and they agreed we should share our Christmas with you. Hurriedly we packed the camper with my daughter's fireproof tree, some decorations, the gifts from under the family tree, food, and enough wood for five camfires.

It was not quite dark when I turned up the dirt road into your calico skirts. I had never seen that part of you, even in midsummer, when you do not have men to keep you company. But you were alone this Christmas Eve. That made me glad I had come; no one should be alone on Christmas Eve.

You had seemed so cold when I had stopped for gas only moments before, but you turned warm as I stepped from the cab of the truck. In the dark I couldn't see the splotches of snow on your face, but I could taste your clean air and see, through the breaking clouds, Orion, the Pleiades, and the Crooked Plow. The wind that had buffeted me on the freeway—you must have put it to bed.

As my daughter decorated the tree by the light of the Coleman lantern, you seemed to be enjoying yourself. My sons put heavy rocks on the stand that held the little tree. Later, when the children were asleep, I took the fragile ornament off the

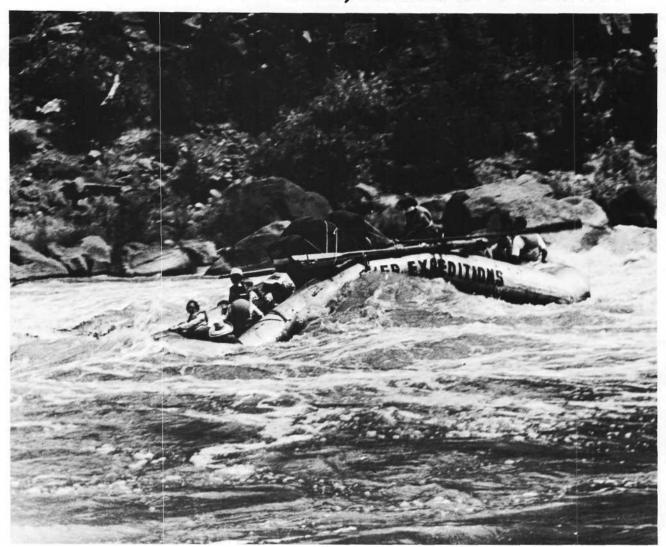
top because I knew that you'd forget and let the wind out. I didn't think the wind would like a Christmas tree. I should have known that you would protect your only tree.

You sent rain in the night, but it was gentle—not even enough to wet the Santa Claus paper on a package overlooked. I think that you sent those few drops just to let us know that you knew we were there.

In the morning we put a blanket under the tree and shared our gifts with you. And you—you gave us the gift of a Christmas that was what a Christmas should be. Thank you.

> JOSEPH MORGAN, Phoenix, Arizona.

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